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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,896	12/17/2003	Boris A. Maslov	76897-018CIP3	4040

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EXAMINER

COLON SANTANA, EDUARDO

ART UNIT	PAPER NUMBER
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2837

DATE MAILED: 12/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/736,896

Applicant(s)

MASLOV ET AL.

Examiner

Eduardo Colon Santana

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☒ Other: Detailed Action.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/30/2006 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claims 1-5 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-5 and 8 attempts to define the subject matter in terms of a result to be achieved, which merely amounts to a statement reciting a machine having a torque density of at least 20 Nm/kg, without providing the technical features necessary for achieving this result (emphasis added).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent No. 6,278,216 and Heidelberg et al. U.S. Patent No. 4,754,207 and further in view of Mongeau U.S. Patent No. 5,917,295.

Referring to claims 1-5 and 8, Li discloses a vehicle motor for a motor bicycle having two wheels and one in-wheel electric motor, (see all figures and respective portions of the specifications). Although Li only discloses in-wheel electric motor, a near-wheel, a direct-drive or a mechanically link is also well known in the art. Li further discloses that the electric motor includes a stator (4) and rotor (3), wherein the stator comprises a plurality of stator core elements (42B) being arranged in groups, being associated with a corresponding one of the phases of the electric motor. However, Li does not explicitly describe that each of the groups (figures 8 and 10) being structurally separated and magnetically isolated and separated from other groups. On the other hand, Heidelberg et al. discloses a rotary electric motor having an electromagnet with adjacent groups of electromagnets having different switching phases (see figure 1 and respective portions of the specifications). Heidelberg further discloses that the electric motor includes a stator (#6) and rotor (#4), wherein the stator comprises a plurality of stator core elements (#12) being arranged in groups (#22), being associated with a corresponding one of the phases of the electric motor (see Col. 2, lines 22-33). Additionally, Heidelberg et al. clearly describes each of the groups being structurally separated and

having magnetic material magnetically isolated and separated from other groups (see figure 1 and Col. 2, lines 17-25). However, Heidelberg et al. or Li do not explicitly describe the controller which is used to control electrical flow in each group being independently controllable of each other phase, thereby establishing relative rotation between rotor and stator. Nonetheless, Mongeau disclose an improved motor drive system having a plurality of series connected H-bridges (see figures 1, 7 and respective portions of the specification), wherein each phase of the motor is controlled independently of each other and is believe to control the electric flow in one phase with a parameter different from that another phase.

Since Li et al., Heidelberg and Mongeau are in the same field of endeavor, the purpose disclosed by Heidelberg and Mongeau would have been recognized in the pertinent art of Li.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have each phase controlled independently of each others phase by a controller as taught by Mongeau within the teaching of Li and Heidelberg for the purpose of reducing switching losses and to reconfigure each motor phase winding at various operating modes, optimizing the speed of the motor at different loads (dynamic selection) to increase efficiency.

On the other hand, even though Li, Heidelberg and Mongeau are silent on the torque-to-weight ratio (20 Nm/kg), these design parameters is an obvious implementation in the structure of the motors being used. It would have been an obvious matter of design choice to

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one having ordinary skill in the art at the time the invention was made to claim a specific torque-to-weight ratio, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Referring to claims 6 and 9, the combination of Li, Heidelberg and Mongeau addresses the similar limitation of claim 1 above regarding an in wheel motor with each of its electromagnetic circuit being sufficiently isolated.

Referring to claims 7 and 10, the combination of Li, Heidelberg and Mongeau discloses an in-wheel motor that moves a vehicle as shown in figure 3 and described in claim 1 above. Additionally Li mentions the use of a motor control system (figure 12) having a processor (MPU), which obviously would be dynamically adapted to any user inputs (i.e. speed, brake, etc.); any operating conditions (i.e. temperature) and any operating parameter (i.e. torque, current, voltage) to form an adapted control scheme.

Response to Arguments

4. Applicant's arguments with respect to the claims have been fully considered but they are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eduardo Colon Santana whose telephone number is (571) 272-2060. The examiner can normally be reached on Monday thru Thursday 6:30am - 5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan can be reached on (571) 272-2800 X.37. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Eduardo Colon Santana
Examiner
Art Unit 2837

ECS
December 11, 2006



LINCOLN DONOVAN
SUPERVISORY PATENT EXAMINER